Cobra®

Operating Instructions

800 WATT POWER INVERTER

CPI 880

Printed in China
Part No. 480-524-P
Version C

Nothing Comes Close to a Cobra®

Our Thanks to You

Thank you for purchasing the Cobra CPI 880 inverter. Properly used, this Cobra product will give you many years of reliable service.

How Your Cobra Power Inverter Works

The Cobra power inverter is an electronic product that has been designed and built to take low voltage DC (Direct Current) power from your automobile or other low voltage power supplies and convert it to standard 115 Volt AC (Alternating Current) power like the current you have in your home. This conversion process thereby allows you to use many of your household appliances and electronic products in automobiles, RVs, boats, tractors, trucks and virtually anywhere else.

Customer Assistance

Should you encounter any problems with this product, or not understand its many features, please refer to this owner's manual. If you require further assistance after reading this manual, Cobra Electronics offers the following customer assistance services:

For Assistance in the U.S.A.

Automated Help Desk English only.
24 hours a day, 7 days a week 773-889-3087 (phone).

Customer Assistance Operators English and Spanish.
8:00 a.m. to 6:00 p.m. CT, Monday through Friday (except holidays) 773-889-3087 (phone).

Questions English and Spanish.
Faxes can be received at 773-622-2269 (fax).

Technical Assistance English only.
www.cobra.com (on-line: Frequently Asked Questions).
English and Spanish. productinfo@cobra.com (e-mail).

For Assistance Outside the U.S.A.

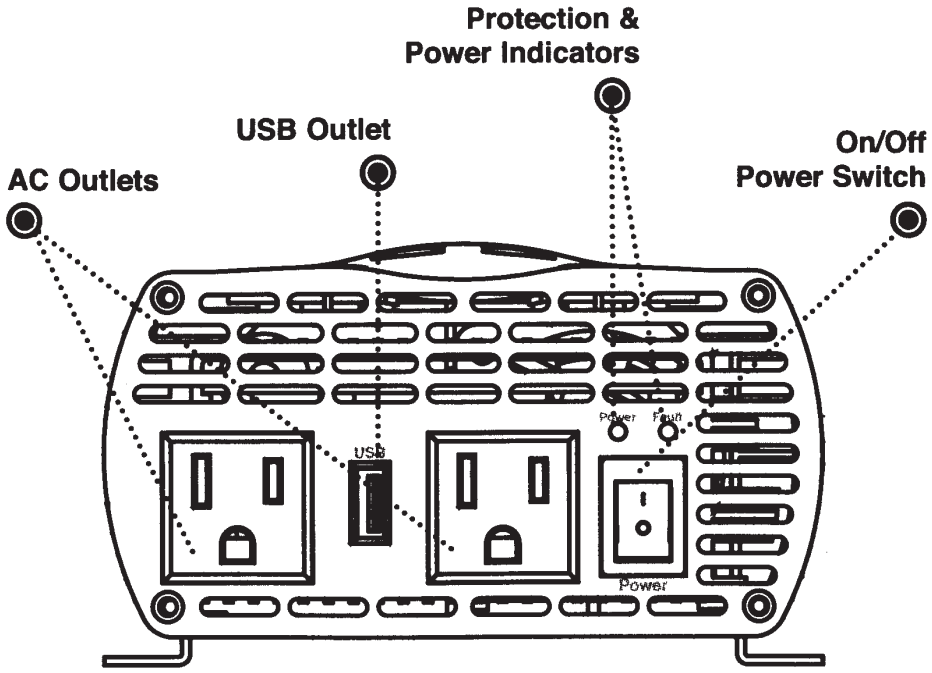
Contact Your Local Dealer

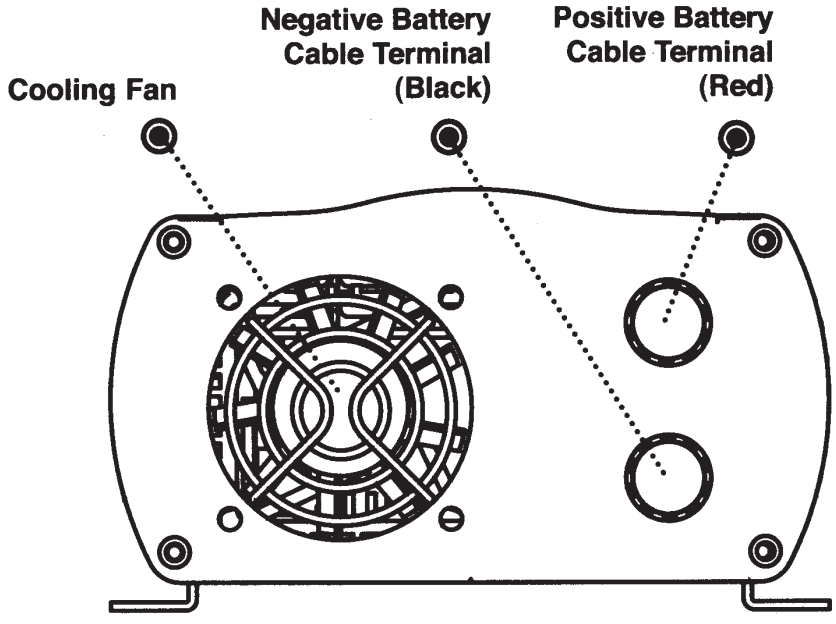
©2008 Cobra Electronics Corporation
6500 West Cortland Street
Chicago, Illinois 60707 USA
www.cobra.com

Product Features

Features

- Two AC Receptacles
- Automatic Thermal Protection/Shutdown
- Reverse Polarity Protection
- Low Battery Alarm
- Low Battery Shutdown





Contents

Introduction

Our Thanks to You A1
Customer Assistance A1
Product Features A2
Important Safety Information 1
Quick Evaluation Before Installation 3

Installation

Installation Requirements 5
Mounting 6
Connecting Cables 7
Power Consumption 10

Operation

Turning Your Inverter On or Off 11
Power and Protection Indicators 12
Operating Limits 13
Troubleshooting Guide 14
Specifications 15

Warranty

Warranty 16

Customer Assistance

Maintenance 17
Product Service 17

Important Safety Information

Before installing and using your Cobra power inverter, please read these general precautions and warnings.

Caution and Warning Statements

To make the most of this inverter, it must be installed and used properly. Please read the installation and operating instructions carefully before installing and using it. Special attention must be paid to the **CAUTION** and **WARNING** statements in the manual.

CAUTION Statements specify conditions which could cause damage to the unit or other equipment.

WARNING Statements identify conditions that could result in personal injury or loss of life.

General Precautions

1. **Never install the inverter in a boat's engine compartment where gas and battery fumes are present.**
2. Do not operate the inverter if it has been dropped or damaged in any way.
3. Do not open the inverter; it contains no user-serviceable parts. Attempting to service unit could cause electrical shock.

   NOTE Internal components remain charged after all power is disconnected.
4. Do not expose the inverter to rain, snow, bilge water or spray.
5. Do not obstruct the ventilation openings.
6. Do not install the inverter in zero-clearance compartment.

CAUTION This inverter should be used in **negative ground** applications only.

WARNING Power inverters contain components that can produce arcs or sparks. To prevent fire or explosion, do not install the inverter in areas or compartments containing batteries or flammable materials or in locations that require ignition-protected equipment.

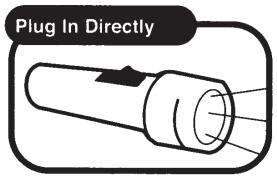
WARNING To reduce the risk of fire, do not cover or obstruct the ventilation openings. Do not install inverter in zero-clearance compartment.

Warning: Wash Hands After Handling Power Cord

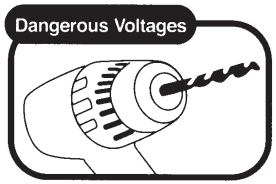
The power cord on this product contains lead, a chemical known in the state of California to cause birth defects or other reproductive harm.

Caution: Rechargeable Appliances

Certain chargers for small nickel cadmium batteries can be damaged if connected to the Cobra 800 watt inverter. Two particular types of equipment are prone to this problem:



1. Small battery-operated appliances such as flashlights, razors, and night lights that can be plugged directly into an AC receptacle to recharge.



2. Certain battery chargers for battery packs used in hand power tools. These chargers have a **WARNING** label stating that dangerous voltages are present at the battery terminals.

This problem does not occur with the vast majority of battery operated equipment. Most use a separate charger or transformer that is plugged into the AC receptacle and produces a low voltage output. If the label on the AC adapter or charger states that it produces a low voltage AC or DC output (less than 30 volts), the inverter will have no problem powering the adapter safely.

Cobra 800 Watt Output Waveform

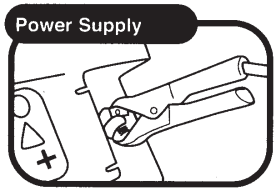
Some very sensitive electronic equipment may not operate satisfactory on "square wave" or "modified sine wave." The output waveform is referred to as "square wave" or "modified sine wave." It is a stepped waveform designed to have characteristics similar to the sine wave shape of utility power. A waveform of this nature is suitable for most AC loads (including linear and switching power suppliers used in electronic equipment, transformers and motors).

Quick Evaluation Before Installation

This section provides you with basic information about the inverter and how to check its performance before installation.

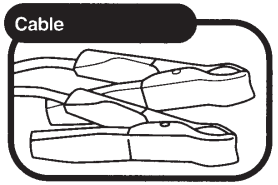
Be Sure to Have on Hand:

- A 12 volt DC power source (such as a vehicle battery).



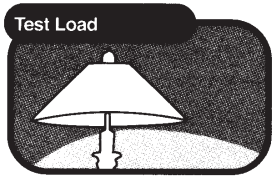
The power source must provide between 11 and 15 volts DC and be able to supply enough current to run the test load. As a rough guide, divide the wattage of the test load by 10 to get the current (in amperes) the power source must deliver.

- The provided two foot direct-to-battery 12 gauge cable.



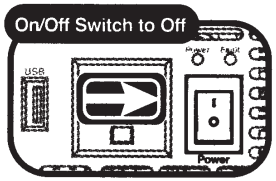
Only use the cable provided with your inverter.

- A test load that can be plugged into the AC receptacle on the inverter for short term testing at a low power level.

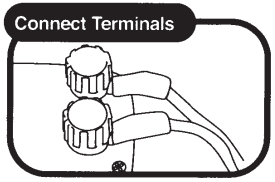


Quick Evaluation Before Installation

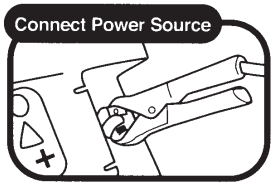
To check your inverter's performance before installation:



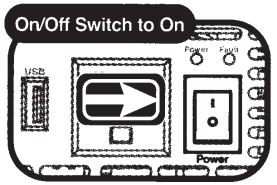
1. Turn the inverter **off** (see page 11 for details). If the power source is a DC power supply, switch it **off** as well.



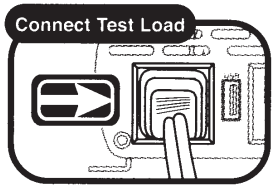
2. Connect cables to power input terminals (see page 7 for details).
3. Connect cables to power source (see page 7 for details).
4. Check to make sure all connections are secure.

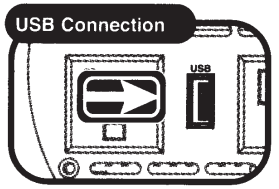


5. Turn the inverter **on**. If the power source is a DC power supply, switch it **on** first.
6. Plug in the test load.



The inverter should supply power to the load. If the inverter is not working properly, refer to the troubleshooting guide on page 14 or power and protection indicators section on page 12.





Installation Requirements

Installation Requirements

The inverter must be installed in an area that meets all of the following requirements:

A. Dry
Do not place in an area where water can drip or splash on the inverter.

B. Cool
Ambient air temperature should be between 30°F and 105°F (0°C and 40°C). The cooler the better.

C. Ventilate
Allow at least one inch (three cm) of clearance around the inverter for proper airflow. Make sure that ventilation openings on the ends of the unit are not obstructed.

D. Safe
Do not install the inverter in the same compartment as a battery or in any compartment that contains flammable liquids such as gasoline.

E. Close to Battery
Install unit as close to battery as possible (without being in the same compartment) to minimize the length of cable required to connect the inverter to the battery. It is better and cheaper to run longer AC wires than longer DC wires (cables).

CAUTION To avoid fire, do not cover or obstruct ventilation openings. Do not install inverter in a zero-clearance compartment. Overheating may result.

CAUTION The inverter must only be connected to batteries with a nominal output voltage of 12 volts. It will not work with a 6 volt battery, and will be damaged if it is connected to a 16 volt battery.

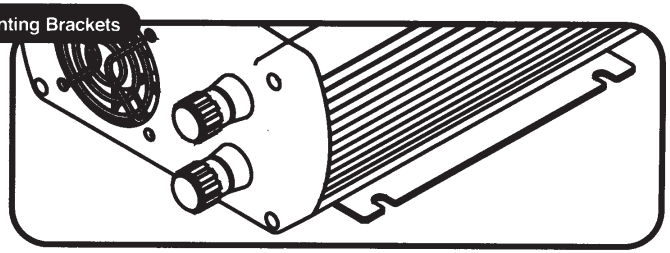
WARNING This unit contains components which can produce arcs or sparks. To prevent fire or explosion, do not install in compartments containing a battery or flammable materials, or in a location which requires ignition protected equipment.

Mounting

To mount your inverter:

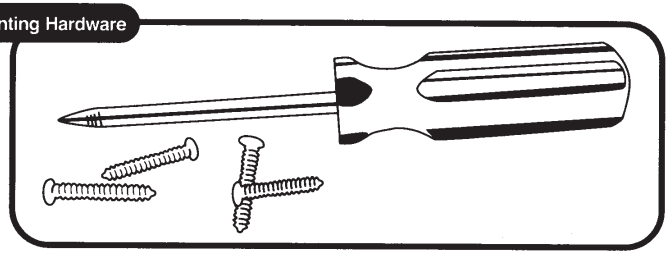
1. Place the inverter on a flat surface with the mounting bracket against the mounting surface.

Mounting Brackets



2. Mount to secure surface using mounting hardware that is corrosion resistant (not included).

Mounting Hardware



The inverter can be mounted horizontally or vertically.

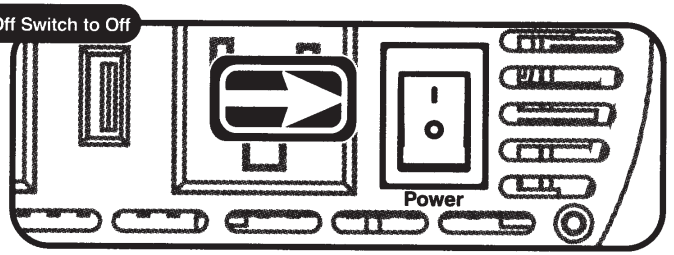
Connecting Cables

Power wire and wiring are very important to the performance of the inverter. Because the inverter has a low voltage, high current input, low resistance wiring is essential between the battery and inverter. This is so it
can deliver the maximum amount of energy to the load. **Only use the cables provided with your power inverter.**

To connect the cables between the inverter and the battery:

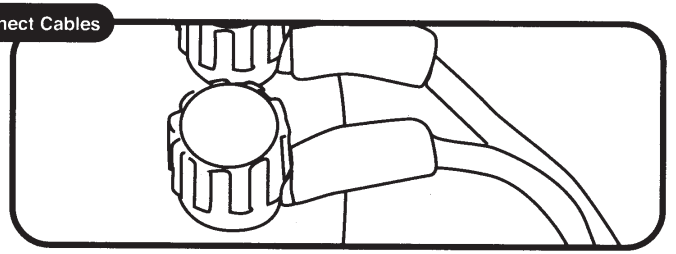
1. Turn the **On/Off Switch** on the inverter to the **off** position. If the power source is a DC power supply, switch it **off** as well.

On/Off Switch to Off



2. Connect cable to the **Power Input Terminals** on right side panel of the inverter. The red terminal is positive (+) and the black terminal is negative (-).
   Insert the ends of the cables onto the terminals and tighten the screws to clamp the cables safely.

Connect Cables

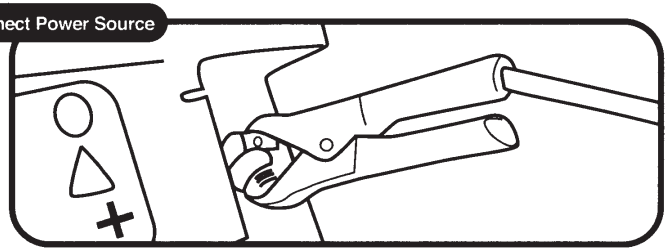


3. Connect cable to the power source:
   a. Connect the cable from the **Negative (Black) Terminal** of inverter to the **Negative Terminal** of the power source. Make a secure connection.
   b. Connect the cable from the **Positive (Red) Terminal** of the inverter to the **Positive Terminal** of the power source (the battery's main fuse or the battery selector switch, if you are using one). Make a secure connection.

You might observe a spark when you make this connection since current can flow to charge capacitors in the inverter.

All power connections to your Cobra inverter must be **Positive to Positive** and **Negative to Negative**.

Connect Power Source



CAUTION Do not connect the inverter and another AC source (such as a generator or utility power) to the AC wiring at the same time. The inverter will be damaged if its output is connected to AC voltage from another source. Damage can even occur if the inverter is switched **off**.

CAUTION Do not connect the inverter to an AC branch circuit that has high-power consumption loads. It will not operate electric heaters, air conditioners, stoves, and other electrical appliances that consume more than 800 watts.

CAUTION Loose connectors result in excessive voltage drop and may cause over heated wires and melted insulation.

CAUTION Reverse polarity connections (positive to negative) will blow internal fuses in the inverter and may permanently damage the unit. Such damage is not covered by the warranty.

CAUTION Remove any jewelry (watch, ring, etc.). Be careful not to short circuit the battery with any metallic object (wrench, etc.).

WARNING 115 volt AC power is potentially lethal. Do not work on AC wiring when it is connected to the inverter (even if it is switched off) unless the DC power source is physically disconnected from the inverter. Also, do not work on AC wiring if it is connected to another AC power source such as a generator or the utility line.

WARNING You may observe a spark when making the connection because current can flow to charge the capacitors in the inverter. **Do not make this connection in the presence of flammable fumes.** Explosion or fire may result. Thoroughly ventilate the battery compartment before making this connection.

Power Consumption

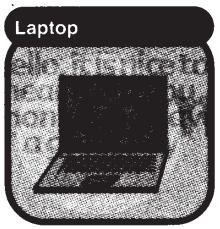
For each piece of equipment you will be operating from the inverter, you must determine the battery's **reserve capacity** (how long the battery can deliver a specific amount of current – in automotive batteries, usually 25 amperes) or **ampere-hour capacity** (a measure of how many amperes a battery can deliver for a specified length of time).

Example – Reserve capacity: a battery with a reserve capacity of 180 minutes can deliver 25 amperes for 180 minutes before it is completely discharged.

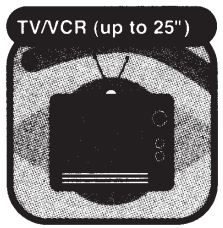
Example – Ampere-hour capacity: a battery with an ampere-hour capacity of 100 ampere-hours can deliver 5 amperes for 20 hours before it is completely discharged.

To determine the battery ampere-hour capacity you require:

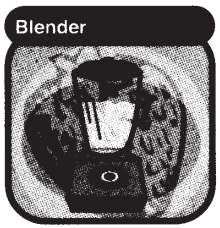
1. Determine how many watts each piece of equipment consumes. This can normally be found on the product label. If only the current draw is given, multiply the current draw by 115 to get the watt consumption.
2. Estimate the time (in hours) that each piece of equipment will be running between battery charging cycles.
3. Calculate the total watt-hours of energy consumption (power x operating time) using the average power consumption and the total estimated running time (in hours). **Power x Operating Time = Watt-Hours.**



50 watts x 2 hours = 100 watt-hours



115 watts x 3 hours = 345 watt-hours

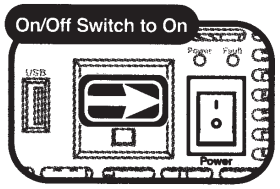


300 watts x 15 minutes = 75 watt-hours

4. Divide the watt-hours by 10 to determine how many power supply's (12 volt) ampere-hours will be consumed.

Turning Your Inverter On or Off

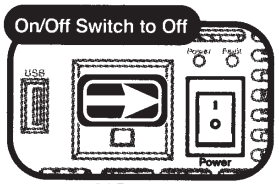
Be sure to have your power inverter properly installed before attempting to turn the unit **on** (see installation page 5).



To turn the power inverter on:

1. If a DC power supply is being used as the power source, switch it **on**.
2. On the left side panel, switch the **On/Off Switch** to **on**.

The inverter is now ready to deliver AC power to your loads. If several loads are to be operated by the inverter, turn them **on** separately, after the inverter has been turned **on**. This will ensure that the inverter does not have to deliver the starting currents required for all the loads at once.



To turn the power inverter off:

1. On the left side panel, switch the **On/Off Switch** to **off**.

NOTE The **On/Off Switch** turns the control circuit in the inverter **on** and **off**. It **does not** disconnect power from the inverter.

NOTE When the switch is in the **off** position, the inverter draws no current from the battery. When it's in the **on** position, but no power is being supplied to the load, the inverter draws less than 500 milliamperes from the battery. This is low current draw. It would take more than a week to discharge a 100 ampere-hour battery at this rate depending on the age of the battery.

The Cobra line of quality products includes:

CB Radios

microTALK® Radios

Radar/Laser Detectors

Safety Alert® Traffic Warning Systems

Mobile GPS Navigation Systems

HighGear® Accessories

CobraMarine® VHF Radios

CobraMarine® Chartplotters

Power Inverters

Accessories

For more information or to order any of our products, please visit our website:

www.cobra.com

Cobra®

Product Registration

Register your product within 30 days of purchase at **www.cobra.com/register** and get:

15%

A **15% discount** on a future purchase of a great Cobra product.

Exclusive special **offers** on accessories and related products.

©2010 Cobra Electronics Corporation

Part No. 480-654-P

Version A